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Molecular diagnosis of recurrent *Streptococcus mutans* endocarditis by PCR amplification and sequencing

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The use of a broad-range bacterial polymerase chain reaction (PCR) followed by direct sequencing has been successfully applied to the detection of bacterial DNA in excised cardiac tissues of patients with infective endocarditis (IE) [1]. It is now a useful tool for investigating patients with culture-negative IE, allowing the detection of non-culturable organisms such as *Tropheryma whippelii* [2] and *Bartonella* [3]. We report a case of recurrent *Streptococcus mutans* IE diagnosed by means of this molecular approach applied to a resected heart valve.

A 63-year-old alcoholic man with aortic stenosis was admitted to a general hospital in May 1997 with persistent fever. Transthoracic echocardiography showed the aortic stenosis and no valvular vegetation; transesophageal echography was not performed. Definite IE was diagnosed according to the Duke criteria [4] when three blood cultures yielded *S. mutans*, a typical microorganism for IE (major criteria) associated with three minor criteria: (i) predisposing heart condition, (ii) fever and (iii) immunologic phenomena (circulating immune complexes, proteinuria 0.5 mg/L, leucocyturia 13 800/min). The patient was treated successfully with intravenous amoxicillin 6 g daily for 4 weeks and netilmicin 300 mg daily for 2 weeks. Dental extractions were performed at the same time, at which time dental abscesses were identified as the probable source of bacteremia. The patient returned home and was considered cured.

In November 1997 and March 1998, he had transient episodes of fever which regressed spontaneously. In May 1998, he was treated by his general practitioner with an undetermined antibiotic for *Escherichia coli* urinary tract infection. No blood cultures were performed. In December 1998, he was admitted to Louis Pradel Hospital in Lyon with a diagnosis of recurrent IE, based on fever (41 °C), aortic insufficiency, three positive blood cultures yielding *E. coli*, and multiple vegetations on the aortic valve, visualized by means of transesophageal echography. The leukocyte count was 16 Giga/L, with 85% neutrophils. Antibiotic treatment combined cefotaxime 6 g daily and netilmicin 160 mg daily. The occurrence of transient cerebral ischemia and previously unknown grade I atrioventricular block led to replacement of the aortic valve by a St Jude's prosthesis. The patient was considered cured after a 5-week postoperative course of antibiotics.

Microscopic examination of the aortic vegetations showed features typical of definite IE [4], with the presence of polymorphonuclear leukocytes; Gram staining showed cocci and no rods. Bacterial culture was negative. The vegetation was tested for bacterial DNA by means of universal PCR targeting eubacterial 16S rDNA [5]. It yielded a 455-nucleotide fragment

whose nucleotide sequence was 97% identical to that of the 16S rDNA sequence of *S. mutans* (accession number X58303). The negative PCR control consisted of an excised aortic valve from a patient who had aortic valve IE due to *S. mutans* 30 months before valve replacement. Histopathologic sequelae of IE were present but no cocci were revealed by Gram staining. No amplification was obtained by universal PCR, showing the absence of persistent *S. mutans* DNA in the excised valve. The first patient was thus considered to have recurrent *S. mutans* IE rather than *E. coli* IE.

Recurrent IE is defined as a new episode occurring more than 6 months after the first, or a new episode with a second, organism [6]. In some cases recurrent *S. mutans* IE has been described with very long delays after the first episode: in one, the recurence occurred more than 3 years after complete recovery from the first episode [7]; in the other, the patient experienced three episodes of reccurrences at least 1 year apart with biochemically identical strains of *S. mutans* [6]. We cannot be sure that our patient was cured of his first episode of IE, as he had repeated transient episodes of fever between his first and second episode of clinical endocarditis. Indeed, *S. mutans*-positive amplification was associated with the presence of Gram-stained cocci in cardiac tissue, 31 months after blood cultures yielded *S. mutans*. The IE could have been caused by both *S. mutans* and *E. coli*, as the patient also had *E. coli* bacteremia in December 1998, but single sequencing peaks were always obtained, ruling out the presence of two different template DNAs. Moreover, *E. coli* is a very uncommon cause of endocarditis [8]; *S. mutans* was thus probably the sole agent responsible for recurrent IE, and the *E. coli* bacteremia, possibly secondary to urinary tract infection, was considered as a second septic event in this patient with chronic alcoholism.

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In vitro activity of moxifloxacin against *Stenotrophomonas maltophilia* blood isolates from patients with hematologic malignancies

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Stenotrophomonas maltophilia has recently emerged as an important nosocomial pathogen in immunocompromised cancer patients, organ transplant recipients and mechanically ventilated patients [1,2]. Isolates from hospitalized patients are often resistant to various antibiotics including carbapenems, β-lactams and aminoglycosides [2,3]. Conversely, newer quinolones like levofloxacin, trovafloxacin and clinafloxacin seem to have significant activity against *S. maltophilia*, including isolates